

Organic matter and heavy metals in grey-water sludge

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Abstract

Grey-water intended for non-potable reuse is being intensively studied, but little attention has been given to the associated solid fraction, the grey-water sludge. In this study grey-water sludge originating from bathroom grey-water has been screened with respect to organic matter; particles; short-chain fatty alcohols and acids; selected metals and basic parameters as well as characterization of the organic matter content by oxygen utilization rate (OUR). The grey-water sludge contains metal loads comparable to Danish sewage sludge, and it exceeds the Danish quality criteria for spreading on agricultural land for cadmium and nickel. If dewatered and managed as soil it would be classified as 'Class 3; polluted soil' with respect to cadmium, copper and nickel. The OUR results indicate that the grey-water biological sludge contains an equivalent amount of readily degradable organic matter compared to municipal activated sludge. But it contains 35% more readily, and 90% more slowly, hydrolysable organic matter than municipal sludge.

Keywords: cadmium, copper, grey wastewater, lead, nickel, suspended solids